Charles University

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Title of diploma thesis: Evaluation of liver toxicity *in vitro*

The subject of the diploma thesis is toxicity evaluation of newly synthesised substances on a cellular model representing a hepatocyte. The tested substances have been provided by the Department of Organic and Bioorganic Chemistry at the Faculty of Pharmacy in Hradec Králové, Charles University, as potential antifungal pharmaceuticals and medicine effective against Methicillin-resistant Staphylococcus aureus (MK-NO_2-1, MK-NO_2-2, DAB-5-K, PABA-Me-5, PABA-Et-5, MK-F-1, PABAN-3, PABAN-5, MK-F-2, MK-CF_3-1, MK-CF_3- 2).

In order to determine the toxicity we have implemented two methods. The first method is based upon measuring metabolic activity of cells by means of reducing tetrazolium to a colored product. The second method detects the amount of LDH released as a marker of toxicity. The human hepatoma cell line HepG2was used as a model. . The IC50 and EC50 parameters were used to assess the degree of viability and cytotoxicity.

The final values obtained from the first method indicated all tested substances showed a certain level of toxicity to the hepatic tissue. MK-CF_3-2 is the most toxic substance. Based on the obtained values, the used standard (amfotericin B) can be considered as non-toxic substance to the HepG2 cells. The second method could not be evaluated due to the low level of sensitivity of the test.